WHAT IS CLAIMED IS:

1. A power switching module comprising:

- at least one power switch placed above at least one other power switch, each power switch including upper walls and lower walls each adapted to be cooled through thermal conduction by a cooling medium;

- lower closed channels and upper closed channels configured to circulate a cooling medium along said lower walls and said upper walls, respectively, of said at least one power switch and of said at least one other power switch; and

- a lower passage in said power switching module along and above said upper wall of said at least one other power switch, and an upper passage in said power switching module along and below said lower wall of said at least one power switch such that said upper walls are cooled by circulating a cooling medium in said lower passage and said lower walls are cooled by circulating a cooling medium in said upper passage.

2. The power switching module as claimed in claim 1, wherein said lower passage and said upper passage have two ends interconnected to form a single cooling medium circulation circuit.

3. The power switching module as claimed in claim 1, wherein said at least one power switch and said at least one other power switch each include a single heatsink thermally connected to either one of said lower walls and said upper walls, each said heatsink being equipped with fins positioned so as to be in direct contact with the cooling medium circulating in said lower closed channels and in said upper closed channels.

4. The power switching module as claimed in claim 3, wherein only said upper wall of said at least one power switch includes a heatsink and only said lower wall of said at least one other power switch includes a heatsink.

5. The power switching module as claimed in claim 3, wherein said fins of said heatsinks extend parallel to the direction of circulation of the cooling medium.

6. The power switching module as claimed in claim 1, wherein said lower channels and said upper channels are connected to each other to form a single

cooling medium circulation circuit along said upper wall of said at least one power switch and along said lower wall of said at least one other power switch.

7. The power switching module as claimed in claim 1, wherein said lower passage and said upper passage have two ends interconnected to form a single cooling medium circulation circuit and said lower channels and said upper channels are connected to each other to form a single cooling medium circulation circuit along said upper wall of said at least one power switch and along said lower wall of said at least one other power switch and each of said cooling medium circulation circuits is connected to the same pump to effect the circulation of said cooling medium in each of said cooling medium circulation circuits.

8. The power switching module as claimed in claim 1, wherein at least one end of either one of said upper passage and said lower passage and at least one end of either one of said lower closed channels and said upper closed channels are connected to a common inlet connector for receiving the cooling medium and to a common outlet connector for discharging the cooling medium.

9. The power switching module as claimed in claim 1, wherein said cooling medium is a liquid such as water.

10. The power switching module as claimed in claim 1 wherein said at least one power switch and said at least one other power switch each comprises:

- a plurality of transistors, said plurality of transistors each including an emitter, a gate and a collector; and
- first electrical tracks to which one of either said emitter and said gate of each of said plurality of transistors is welded, said first electrical tracks being formed on an inside surface of one of either said upper walls and said lower walls that is cooled by the cooling medium circulating in one of either said lower passage and said upper passage.

11. The power switching module as claimed in claim 10, wherein said at least one power switch and said at least one other power switch further comprises second electrical tracks to which said collector of each of said plurality of transistors is welded, said second electrical tracks being formed on an inside surface of either one of said upper walls and said lower walls that is cooled by the cooling medium circulating in one of either said lower closed channels and said upper channels.

12. The power switching module as claimed in claim 10, wherein said gate and said emitter of each of said plurality of transistors are electrically connected to said first electrical tracks by molten weld cylinders and said collector of each of said plurality of transistors is electrically connected to said second electrical tracks by molten weld cylinders.

13. The power switching module as claimed in claim 1, wherein a spacer substantially parallelepiped in shape is positioned between said at least one power switch and said at least one power switch so that a predetermined distance is maintained between said at least one power switch and said at least one other power switch, and wherein said spacer includes a housing for each of said at least one power switch and said at least one other power switch..

14. The power switching module as claimed in claim 13, wherein said shape of said spacer is such as to permit the open side of said lower channels and said upper channels to be sealed hermetically thereby.

15. The power switching module as claimed in claim 1, wherein said lower passage and said upper passage have two ends interconnected to form a single cooling medium circulation circuit, and wherein a spacer substantially parallelepiped in shape is positioned between said at least one power switch and said at least one other power switch so that a predetermined distance is maintained between said at least one power switch and said at least one other power switch, and wherein said spacer includes a housing for each of said at least one power switch and said at least one other power switch, and wherein said shape of said spacer is such as to permit the open side of said lower channels and said upper channels to be sealed hermetically thereby, and wherein one cooling medium circulation circuit is formed inside said spacer, and wherein said lower passage and said upper passage are rectangular in cross-section and extend inside said spacer parallel to the longest side of said spacer.

16. The power switching module as claimed in claim 1, wherein the height of said lower passage and of said upper passage is not greater than1 mm.

17. A multiphase inverter in which each phase comprises two interrupters, and wherein said two interrupters of the same phase are comprised of a single power switching module, said single power switching module comprising a) at least one power switch placed above at least one other power switch, each power switch

including upper walls and lower walls each adapted to be cooled through thermal conduction by a cooling medium, b) lower closed channels and upper closed channels configured to circulate a cooling medium along said lower walls and said upper walls, respectively, of said at least one power switch and of said at least one other power switch, and c) a lower passage in said power switching module along and above said upper wall of said at least one other power switch, and an upper passage in said power switching module along and below said lower wall of said at least one power switch such that said upper walls are cooled by circulating a cooling medium in said lower passage and said lower walls are cooled by circulating a cooling medium in said upper passage.